Summary

US 301 Project Development

Federal Highway Administration

Delaware Department of Transportation

SUMMARY

A. Administrative Action

(X) Draft Environmental Impact Statement
(__) Section 4(f) Evaluation
(__) Final Environmental Impact Statement
(__) Record of Decision

B. Informational Contacts

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C. Summary Table of Contents

D. Description of Proposed Action/Purpose and Need

US 301 extends approximately 1,100 miles from Sarasota, Florida, to New Castle County, Delaware. With the increase in traffic volume and congestion on I-95 in northern Virginia and

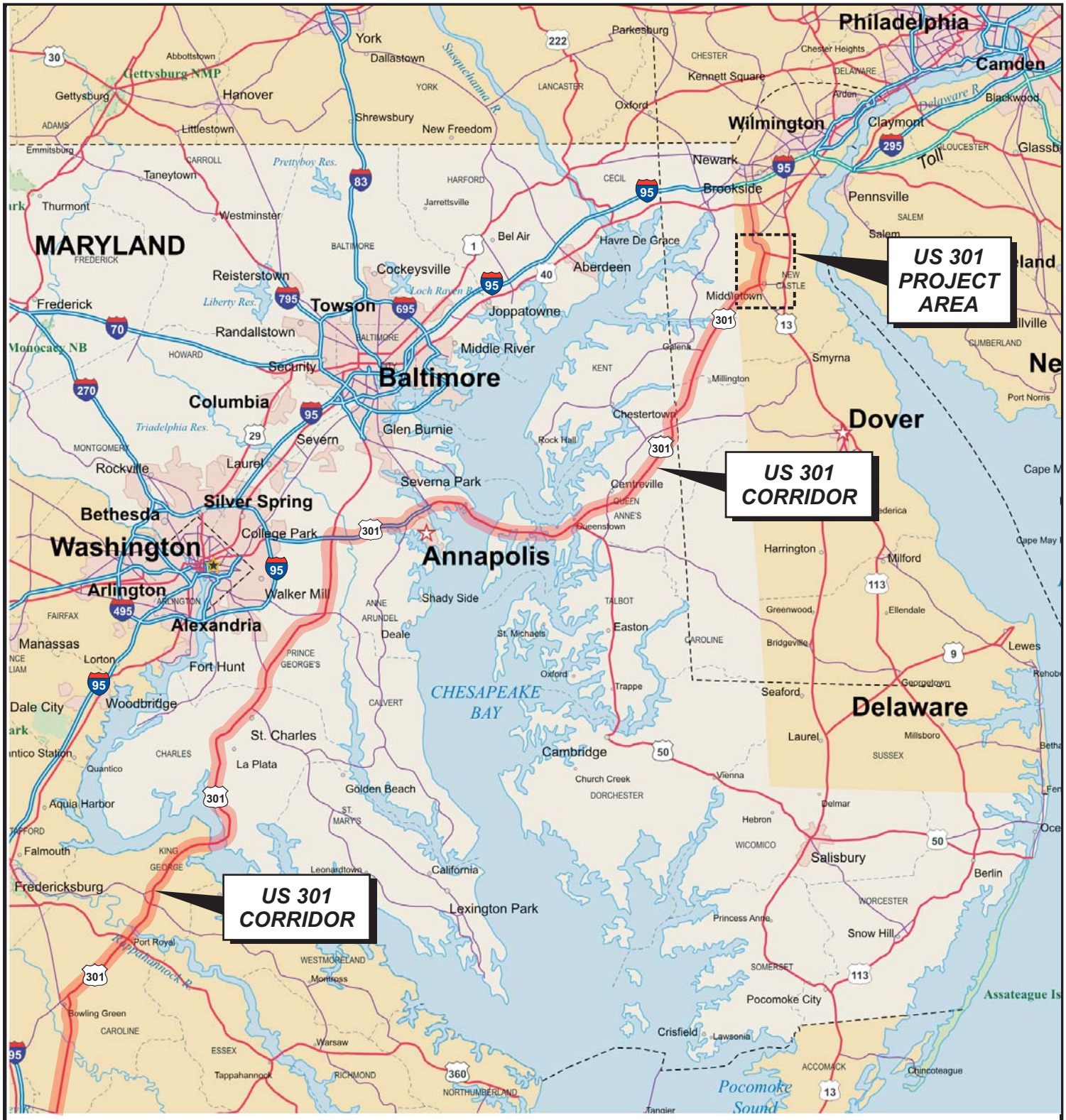
the Washington, D.C. and Baltimore Metropolitan regions, and with the cost of tolls on I-95 at the Baltimore Harbor Crossings and the John F. Kennedy Highway northeast of Baltimore, US 301 has emerged as a through traffic alternative to I-95 between Richmond, Virginia and Wilmington, Delaware, particularly for truck traffic. In addition, with the influx of residential development in southern New Castle County, US 301 is growing as a commuter route to jobs in the region.

In Delaware, US 301 from the state line to Mount Pleasant (south of the C&D Canal) is the only portion of the roadway in the region that is two lanes. At Mount Pleasant, US 301 again becomes a four-lane, divided roadway to its terminus at US 40 in Glasgow, Delaware. The project area comprises the area of New Castle County, Delaware, from south of the point where US 301 traverses into Delaware from Maryland to the C&D Canal on the north, and from the Maryland/Delaware state line on the west to US 13/SR 1 on the east (**Figures S-1 and S-2**). The project area encompasses approximately 31 square miles and includes a portion of the incorporated town of Middletown, Delaware.

Existing US 301 in the project area extends north from the Maryland/Delaware state line, crossing Summit Bridge over the Chesapeake and Delaware (C&D) Canal and continues to US 40. In Maryland and north of the Summit Bridge, US 301 is a four-lane highway. From the state line to Mount Pleasant, US 301 is a two-lane, fully accessed roadway that passes through the Town of Middletown and through a portion of New Castle County that is rapidly developing. Travel today between the state line and SR 1 is accomplished using US 301 from the state line to Mount Pleasant and SR 896, Boyds Corner Road, from Mount Pleasant to SR 1. Boyds Corner Road is a two-lane rural roadway.

The need for the project is demonstrated by the historic growth in the volume of vehicles traveling north/south on US 301 in the project area, and recent and continuing growth in residential land use and concurrent increasing population in the area. As a result of the increasing conversion of farmlands to residential housing, the Delaware Department of Transportation (DelDOT) is seeking to identify and preserve an appropriate transportation corridor before encroaching development precludes the availability of a route for commuter and long-haul transportation.

Highway safety and the high percentage of truck traffic using US 301 also demonstrate the need for the project. A high number of accidents (over 1,200 over the past five years) have been reported in the project area, with over 34 percent of the accidents involving injuries or death. A total of 18 fatalities occurred in the US 301/SR 896 corridor, with 11 on US 301 south of the C&D Canal. The US 301 corridor currently functions as a regional truck route, bypassing the congestion and tolls of the I-95 corridor, resulting in a high ratio of trucks, 25 to 30 percent of the overall traffic at the Delaware/Maryland state line, traveling on US 301. The mix of trucks with local traffic has affected roadway capacity, operations and safety. Approximately 95 percent of the northbound truck traffic originating south of Middletown is destined to points northeast of the C&D Canal, with nearly 90 percent of that destined for places outside of Delaware.



0 5 10 15 20 25

SCALE IN MILES

As Shown

US 301 Project Development

DRAFT ENVIRONMENTAL IMPACT STATEMENT

REGIONAL MAP

Delaware Department of Transportation

November 2006

Figure S-1

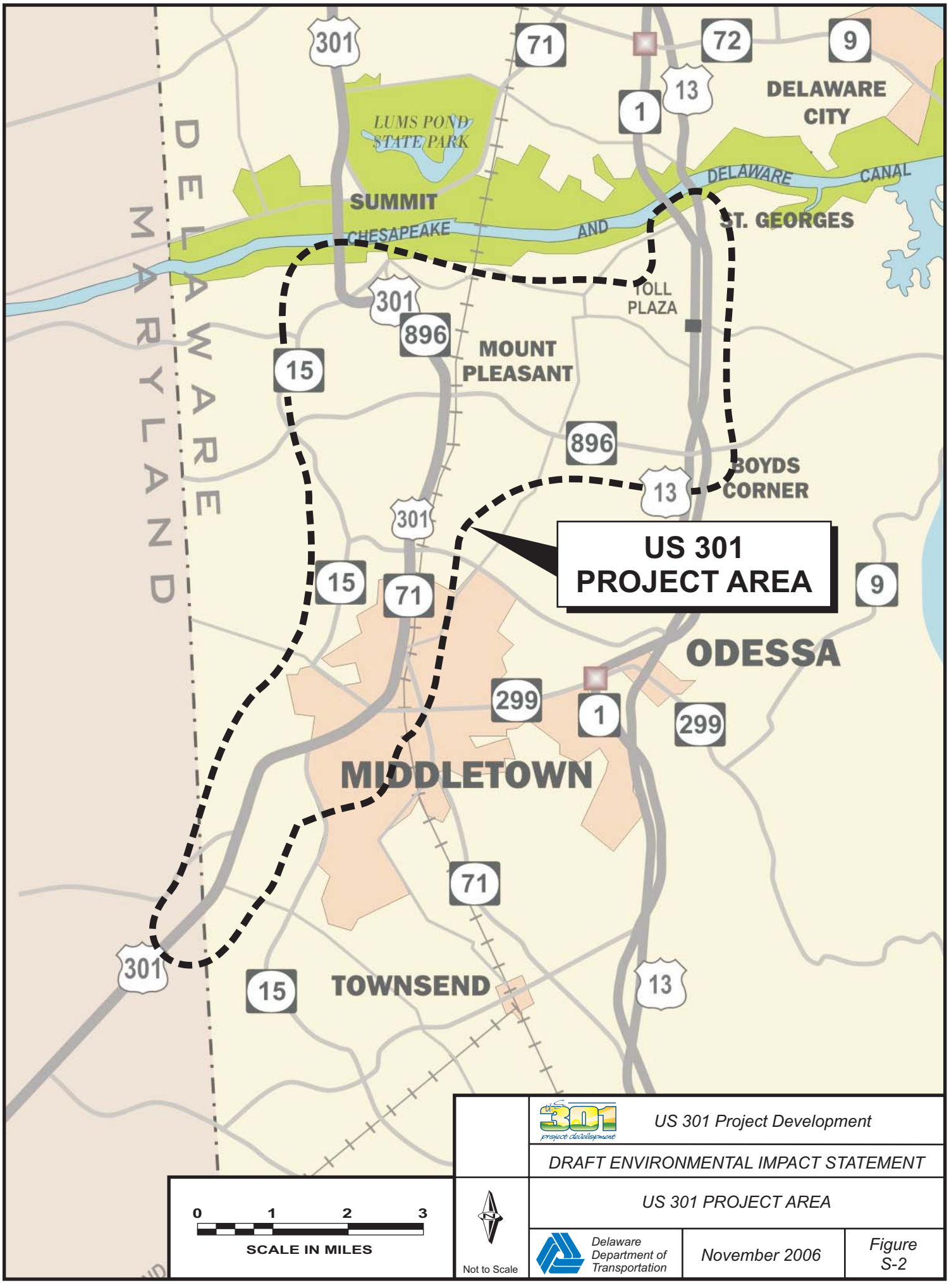

301
71
72
9
1
13
DELAWARE CITY
LUMS POND STATE PARK
SUMMIT
CHESAPEAKE AND DELAWARE CANAL
ST. GEORGES
TOLL PLAZA
301
896
MOUNT PLEASANT
15
896
BOYDS CORNER
13
301
US 301 PROJECT AREA
15
71
9
ODESSA
299
1
299
MIDDLETOWN
71
301
15
TOWNSEND
13
DELAWARE
MARYLAND
0 1 2 3
SCALE IN MILES
Not to Scale
US 301 Project Development
DRAFT ENVIRONMENTAL IMPACT STATEMENT
US 301 PROJECT AREA
Delaware Department of Transportation
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Figure S-2

Population in New Castle County, south of the C&D Canal, increased by approximately 70% between 1990 and 2000. The population is projected to increase by an additional 225% between 2000 and 2030. Southern New Castle County has experienced a growth in population and housing that is more than four times that of the rest of the county and more than three times that of the remainder of the state. This high growth rate is expected to continue. With the increase in residential and non-residential areas, and subsequent increase in population, there has been considerable growth in vehicular traffic along US 301 (refer to **Table I-1** in **Chapter I**). For example, traffic on US 301 south of Middletown increased by 77% between 1990 and 2005 and is projected to increase an additional 74% by 2030. Traffic on Boyds Corner Road increased by 125% between 1990 and 2005 and is projected to increase an additional 108% by 2030.

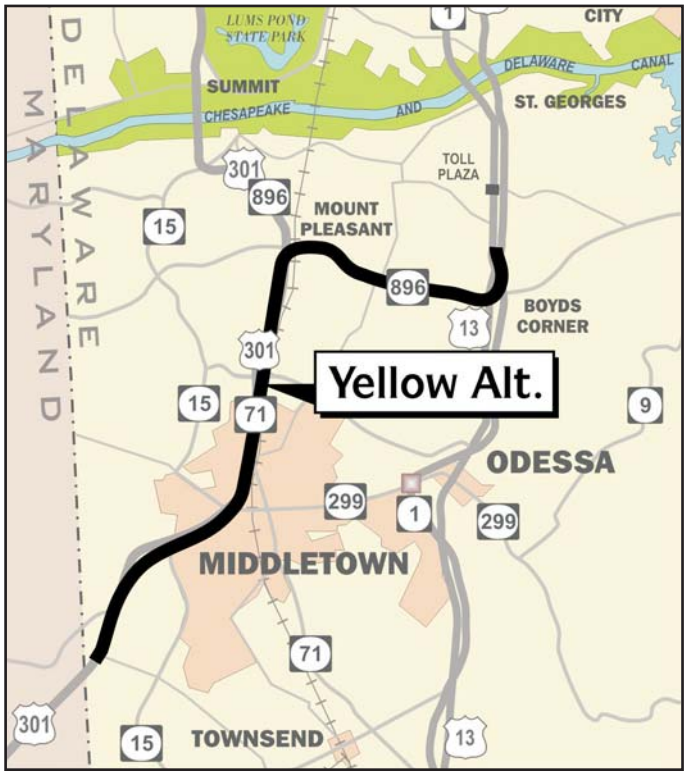
The purpose of the US 301 Project Development effort is to address existing and future congestion on US 301, improve safety, and better manage the heavy truck volumes through the project area. The project proposes to provide improved travel conditions for vehicles traveling north/south between US 301 at the Delaware/Maryland state line and points north of the Chesapeake and Delaware (C&D) Canal via SR 896 (Summit Bridge) and SR 1 in southern New Castle County, Delaware.

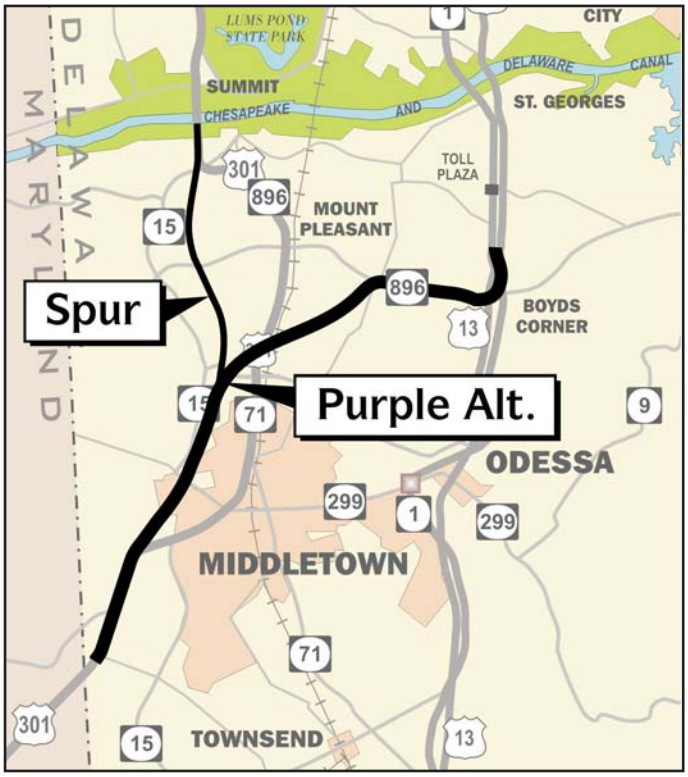
E. Alternatives Considered

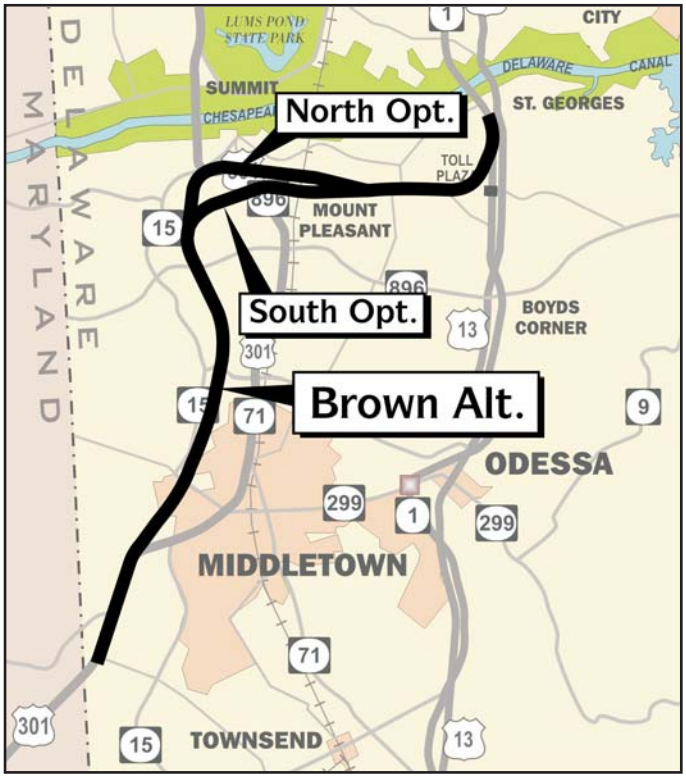
Alternatives initially considered in the project development process included the No-Build Alternative as well as several build alternatives utilizing both on-alignment (existing US 301 and existing SR 896) and new locations. The initial range of alternatives included roadway alignments originally considered in the 1993 Draft Environmental Impact Statement (DEIS) and in the 2000 Major Investment Study (MIS). The Project Team also reviewed multi-modal improvements identified in the MIS, some which have already been implemented.

The No-Build Alternative and ten build alternatives were initially developed for the project. Three (3) preliminary alternatives (Alternative 2 - Light Blue, Alternative 3 - Black and Alternative 4 - White) were dropped from consideration because they did not meet the project purpose and need.

Based on evaluations of environmental impacts of the remaining seven build alternatives, their ability to meet project purpose and need, engineering considerations, resource agency consultation and coordination, and public input, DelDOT recommended that three alternatives not be retained for detailed study in the DEIS: Orange, Blue and Red. The No-Build Alternative and four build alternatives (Yellow, Purple, Brown and Green) are carried forward for detailed evaluation in this DEIS (**Figure S-3**). All of the build alternatives would provide a four-lane, limited-access tolled highway from the Delaware/Maryland state line to SR 1, south of the C&D Canal. Two of the build alternatives (Purple and Green) would also provide a two-lane, limited access Spur Road from the new US 301 to the Summit Bridge. Details of the alternatives carried forward are summarized below and described in detail in **Chapter II, Section C**. There are also options in certain areas along the build alternatives, described in detail in **Chapter II, Section D**.







	US 301 Project Development		
	DRAFT ENVIRONMENTAL IMPACT STATEMENT		
Not to Scale	ALTERNATIVES RETAINED FOR DETAILED EVALUATION		
	Delaware Department of Transportation	November 2006	Figure S-3

Following the evaluation presented in this DEIS and based upon consideration of all of the impacts identified, input from the resource and regulatory agencies and the public, DelDOT is recommending the **Green Alternative, North Option** as the Preferred Alternative for the US 301 project. This alternative includes **Armstrong Corner Road Area Option 2A** and **Summit Interchange Option 3B** as the recommended options. Among the considerations for this recommendation are impacts to communities (property acquisition, potential relocation issues, and community facilities (including Summit Airport); natural resources (wetlands and other Waters of the US, potential bog turtle habitat, and forests); historic resources (physical, visual, and noise effects); and engineering design (ability to meet project purpose and need, design complexity, construction costs).

All of the alternatives evaluated had impacts to natural environmental resources; there was no clear differentiation based on these impacts. However, comparison of the socioeconomic impacts of the alternatives clearly provided direction for the recommendation of the Green Alternative, North Option as the preferred alternative. The Green Alternatives would have the lowest physical impact on existing communities in the project area. Key community facilities, such as Summit Airport, the Cedar Lane Schools, and the Odessa Fire Substation would not be affected by the Green Alternatives. The planned Livable Delaware community of Bayberry would be least affected by the Green Alternatives, and the Green Alternatives would be within close proximity to the fewest number of existing communities. The Green Alternatives provide the greatest potential for minimizing visual and noise impacts because of the roadway elevation that typically passes under local roadways and at a greater distance from communities than other alternatives. The Green Alternatives have been more highly favored by the public for these reasons.

1. No-Build Alternative

The No-Build Alternative is carried forward for detailed evaluation as a baseline condition. The No-Build Alternative reflects the existing roadway conditions, with only scheduled maintenance and minor roadway and safety improvements. Programmed improvements included in the Delaware Department of Transportation *Capital Transportation Plan FY 2005 – FY 2010* (CTP) are assumed under the No-Build Alternative and all of the build alternatives, but the alternatives do not include any of the impacts associated with the CTP improvements. The build alternatives are compared to the No-Build Alternative with respect to impacts to the natural and built environment.

2. Yellow Alternative

The Yellow Alternative extends north parallel to existing US 301 from the state line to Mount Pleasant and then extends east-west to SR 1, parallel to SR 896 (Boyds Corner Road). Four interchanges provide access to service roads south of Middletown, to existing US 301 north of Middletown, to existing SR 896 at Mount Pleasant, and to SR 1 north of Boyds Corner Road.

3. Purple Alternative

The Purple Alternative extends north from the state line on a new location, west of Middletown and existing US 301 (commonly referred to as the ridge route or ridge alignment) to the vicinity of Armstrong Corner Road. From Armstrong Corner Road, the Purple Alternative extends on new location from Armstrong Corner Road northeast to SR 896 (Boyds Corner Road) and then east to SR 1 along the SR 896 alignment. In the vicinity of Armstrong Corner Road, a two-lane Spur Road extends north along the ridge route to the Summit Bridge. Interchanges provide local access south of Middletown, north of Middletown in the vicinity of Armstrong Corner Road, north of Boyds Corner Road on Jamison Corner Road, at SR 1, and on the Spur Road south of the Summit Bridge.

4. Brown Alternative, North and South Options

The Brown Alternative extends north from the state line on the ridge route to north of Mount Pleasant. The North Option continues north and turns east, north of Summit Bridge Farms, while the South Option turns east south of Summit Bridge Farms. Both options join SR 1 south of the C&D Canal Crossing and north of the SR 1 Biddles Corner Toll Plaza. Local access is provided by interchanges south of Middletown, south of Summit Bridge, on SR 896 north of Summit Airport, on Jamison Corner Road north of Boyds Corner Road and at SR 1.

5. Green Alternative, North and South Options

The Green Alternative extends north from the state line on the ridge route to the vicinity of Armstrong Corner Road, where it continues northeast across existing US 301. The North Option continues north over SR 896 and turns east, crossing to SR 1 south of the Airmont community to join SR 1 south of the Canal. The South Option continues northeast to cross SR 896 and join SR 1 south of Scott Run. In the vicinity of Armstrong Corner Road, a two-lane Spur Road extends on the ridge route to the Summit Bridge. Both options provide local access via interchanges south of Middletown, in the vicinity of Armstrong Corner Road, at Jamison Corner Road north of SR 896, at SR 1 south of the C&D Canal Crossing, and on the Spur Road at Bethel Church Road extended and south of the Summit Bridge.

F. Alternatives Eliminated from Further Consideration

1. Orange Alternative

The Orange Alternative provides a new four-lane limited access roadway along the existing US 301 corridor from the Delaware/Maryland state line to north of Mount Pleasant and on a new east-west alignment south of the C&D Canal from Summit Bridge to SR 1. Because of its high impacts to wetlands and properties, the Project Team recommended the Orange Alternative be eliminated from further consideration.

2. Blue Alternative

The Blue Alternative provides a new four-lane limited access roadway on a new east-west alignment, south of Middletown, from the Delaware/Maryland state line to SR 1. South Option 1 is located south of Townsend, while North Option 2 is located north of Townsend. The Project Team recommended that the Blue Alternative Options be eliminated from further consideration because of their high environmental impacts (wetlands, streams, forests and habitat), lack of resource and regulatory agency support (DNREC, DDA, SHPO), high level of public opposition, impacts to State Strategies Level 4 areas, and their inability to achieve a fair level of congestion relief.

3. Red Alternative

The Red Alternative provides a new four-lane limited access roadway on the ridge route and SR 896 alignments from the Delaware/Maryland state line to I-95. The Red Alternative crosses the C&D Canal, requiring construction of an additional bridge, has the highest overall impacts of all of the build alternatives, and did not meet traffic demand for the 65% of vehicles destined for SR 1. The Project Team recommended that the Red Alternative be eliminated from further consideration.

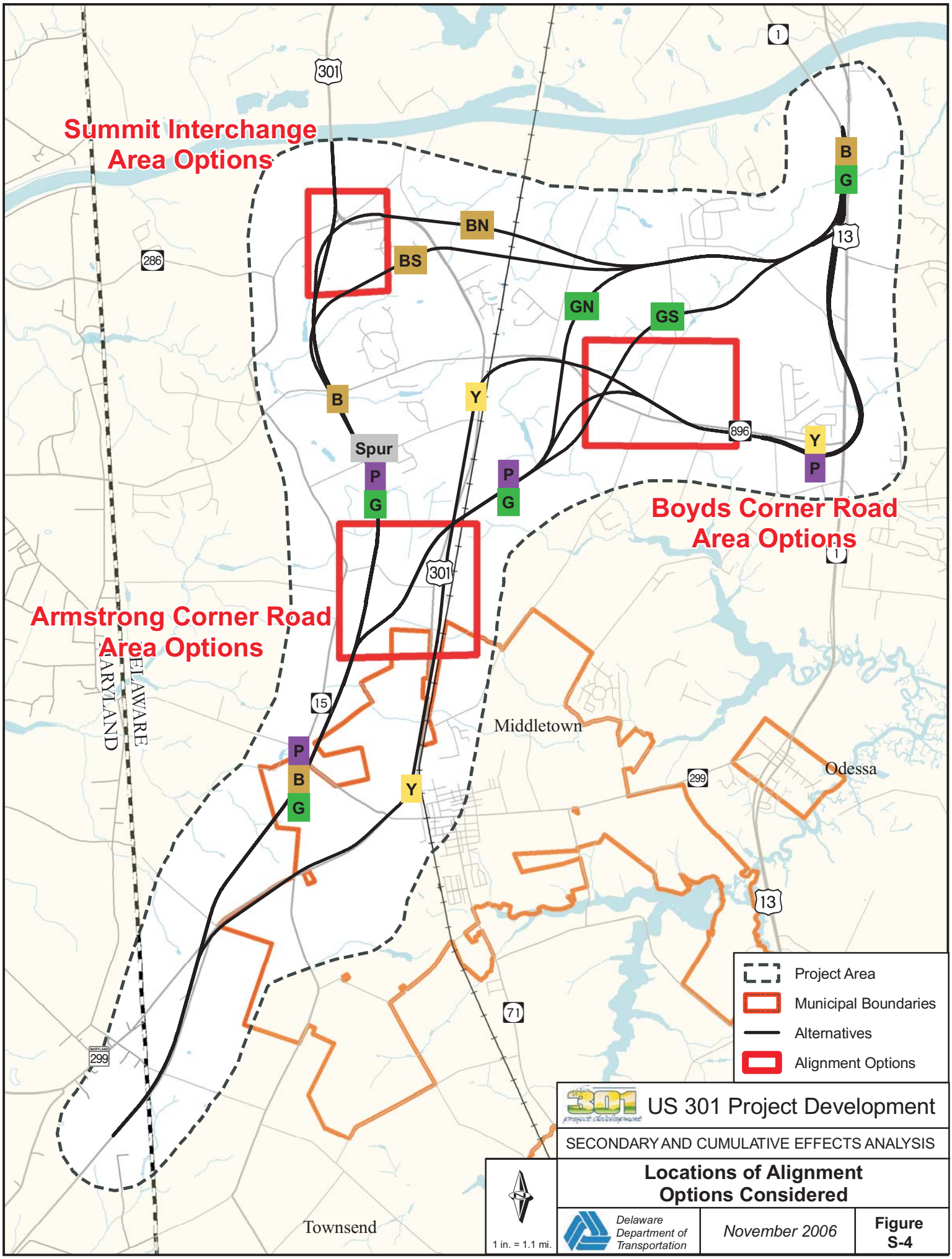
G. Alternative Options

Multiple options for the four retained alternatives were evaluated at three locations – Armstrong Corner Road, Boyds Corner Road, and south of Summit Bridge on the Spur Road – to determine the most efficient design with the least impacts to the socioeconomic and natural environment (***Figure S-4***). The following alternative options are evaluated in this study, each of which is described in detail in **Chapter II, Section D.**

Armstrong Corner Road Area (Purple and Green)	Boyds Corner Road Area (Yellow and Purple)	Summit Interchange Area (Yellow, Purple and Green)
• Option 1	• Option 1	• Option 1 (Yellow)
• Option 2	• Option 2	• Option 2 (Yellow)
• Option 2A	• Option 3	• Option 1 (Purple and Green)
• Option 3	• Option 4	• Option 2 / 2A (Purple and Green
		• Option 3 / 3A (Purple and Green)
		• Option 3B / 3BA (Purple and Green)
		• Option 4 / 4A (Purple and Green)

H. Summary of Potential Impacts

The environmental impacts of each of the build alternatives are compared to the No Build Alternative. The results of the evaluation are summarized on **Table S-1** and in the following sections.


Summit Interchange Area Options
Boyds Corner Road Area Options
Armstrong Corner Road Area Options
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15
299
71
Middletown
Odessa
Townsend
MARYLAND
DELAWARE
Project Area
Municipal Boundaries
Alignment Options
US 301 Project Development
SECONDARY AND CUMULATIVE EFFECTS ANALYSIS
Locations of Alignment Options Considered
1 in. = 1.1 mi.
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Figure S-4

Table S-1: Summary of Impacts of the Alternatives[1]

Alternative	No-Build	Yellow	Purple	Brown		Green	
Resource	Existing roadways	On US 301 and SR 896 alignment	New alignment (ridge route); on SR 896 alignment (with spur)	New alignment (ridge route); new alignment from Summit Bridge to SR 1		New alignment (ridge route); new alignment from Armstrong Corner Road to SR 1 (with spur)	
				North Option	**South Option**	**North Option**	**South Option**
Alignment Length (mi.)	0	19.4	16.9	17.5	15.9	17.5	17.3
Total Area (acres)	0	870	902	896	894	897	876
Res. Displacements (No.)	0	128	7	2	2	4	4
Bus. Displacements (No.)	0	58	5	4	4	8	7
Affected Properties (No.)	0	377	154	100	100	132	130
Wetlands (acres)[2]	0	50.5	24.9	23.9	18.5	26.2	28.3
Wetlands (No.)	0	33	45	39	35	43	40
Tidal Wetlands (acres)[3]	0	0.4	0.4	0.4	0.4	0.4	0.4
Waters of the US (lf)[4]	0	20,708	16,257	15,158	14,278	15,515	16,326
100-Year Floodplain (acres)	0	1.5	1.5	1.0	1.0	1.0	1.0
Agricultural Districts (No./acres)[5]	0	1/14.1	1/32.6	1/32.6	1/32.6	1/32.6	1/32.6
Agricultural Easements (No./acres)[6]	0	0	1/6.0	1/9.4	1/12.4	1/6.0	1/6.0
Prime Farmland Soils (acres)	0	203	415	412	424	437	398
Hydric Soils (acres)	0	158	147	119	115	146	145
Upland Forested Land (acres)[7]	0	36.9	39.9	37.4	51.0	34.1	36.8
Residential Noise Impacts (No.)	0	74	108	67	64	77	63
Residential Noise Impacts after Proposed Visual Berms (No.)	0	74	77	14	27	32	32
Historic Properties: Physical (No.)	0	4	0	0[8]	0[8]	0	0
Historic Properties: Visual or Noise (No.)	0	17	17	11	11	13	15
Capital Cost ($M) (2006 dollars)	0	$686-$758	$616-$680	$550-$608	$499-$551	$534-$590	$526-$582

NOTES:
1. *Based on preferred options for Armstrong Corner Road Area, Boyds Corner Road Area, and Summit Interchange Area. Does not include potential direct impacts to resources in Maryland, which would be the same for all build alternatives. Impacts based on Limit of Disturbance defined in Chapter II.*
2. *Total area of potential ACOE wetlands impacted.*
3. *DNREC tidal wetlands acres included in total wetland.*
4. *Does not include waters within wetlands. lf = linear feet*
5. *Agricultural districts are enrolled for a ten-year renewable period*
6. *Agricultural easements are permanent agricultural preservations*
7. *Does not include forests in wetlands.*
8. *One property which may be eligible for the National Register would be affected by the Brown Alternatives. Refer to Chapter III, Section B.*

1. Socioeconomic Resources

The impacts of the build alternatives were evaluated on socioeconomic resources, including residences, businesses, land use, planned development, farms, and aesthetics in the project area.

The alternatives will impact between 100 and 377 properties; of those, between 12 and 207 are total property acquisitions. The most property acquisitions are with the Yellow Alternative (207 total and 170 partial takings), with the Purple, Brown and Green requiring between 12 and 30 total takings and between 88 and 124 partial property takes (**Chapter III Section A.5**). The potential range of affected properties is between 100 (Brown Alternatives) and 377 (Yellow Alternative).

Relocation assistance will be provided to all residents and businesses as well as owners of properties as necessary in accordance with the *Uniform Relocation Assistance and Real Property Acquisition Act* (1970) *and Amendment*s (1987); see **Appendix D**. A draft relocation plan for the project is also included in the Appendix.

There are many communities located within 600 feet of one or more of the proposed alternatives alignments. Most of the communities consist of neighborhoods of between 20 and 200 single-family homes within individual developments. The community of Middletown Village is the largest group of homeowners, with approximately 290 single family residences and almost 500 town homes (**Chapter III Section A.6**). The Town of Middletown will be impacted by the Yellow Alternative as it bisects the town, affects local access and cross-town connectivity and impacts many existing businesses and residences that front existing US 301 and SR 896 (Boyds Corner Road). The Brown, Purple and Green Alternatives would have less impact on existing communities, however, these alternatives will create individual property impacts within communities.

There are potential aesthetic and visual impacts to communities and individual properties within the viewshed of the proposed alternatives (**Chapter III Section A.8**). The proposed new roadway will be visible from numerous homes in the project area whose existing views are of farm fields and a rural landscape. In some areas, proposed visual screening berms will minimize the effects of this change.

Potential impacts to community facilities include the acquisition of property from Appoquinimink High School, access impacts to the Odessa Fire & Rescue Station 4, and impacts to Summit Airport from the Brown Alternative only (**Chapter III Section A.4**). There are no impacts to parks and recreation areas.

According to the Delaware Office of State Planning Coordination (2002), existing land uses in the project area include agriculture, residential, forests, urban/built-up land, wetlands, water, recreation/open space and transitional land (**Table III-2** in **Chapter III Section A.2**). Although the primary land use is agricultural, much of this land is planned and approved for development.

Land use changes would include the conversion of between 870 and 902 acres from existing uses to transportation use. The greatest land use change is for agricultural lands, with between 521 and 766 acres to be committed to transportation use (**Table III-3** in **Chapter III Section A.2.**), however, much of this land is already proposed for urban development. Between 11.5 and 82 acres of residential land would be required.

As indicated in the preceding paragraphs, there is a large amount of development, both residential and non-residential, planned within the project area and in southern New Castle County (**Figure III-4** and **Tables III-4, III-5** and **III-6** in **Chapter III Section A.3**). Over 6,600 new dwelling units are planned or under construction in the unincorporated areas of southern New Castle County, and an additional 8,413 units planned within the corporate limits of the Town of Middletown. All of the alternatives will impact some planned development. The large planned development of Westown (***Table III-4***) and the development plans for Bayberry will be impacted by construction of the Yellow, Brown, Purple and Green Alternatives. Scott Run Industrial Park will be affected by construction of the Green and Brown Alternatives.

Active farming in the project area includes cropland, dairy and equine enterprises. Five farms are designated as agricultural preservation areas as either permanent agricultural preservation easements or temporary (10-year renewable) agricultural districts (**Figure III-5** in **Chapter III Section A.4**). Virtually all of the project area is overlain by soils designated as prime farmland or soils of statewide importance to farming (**Chapter III Section F.3** and **Figure III-14**). Although much farmland is slated for development, there is a strong sentiment to continue agricultural practice in the project area. The retained alternatives will impact between 203 and 437 acres of prime farmland soils and between 9 and 16 active farm parcels not currently proposed for development (**Chapter III Section A.4**). One agricultural easement and one agricultural district will be impacted by the Purple, Brown and Green Alternatives; one agricultural district will be impacted by the Yellow Alternative.

2. Cultural Resources

The evaluation of cultural resources within the Area of Potential Effect (APE) for the project alternatives for both standing structures and potential archaeological sites is detailed in **Chapter III Section B**. Thirty-one applicable standing structures were identified within the Area of Potential Effect of the project alternatives that are listed or eligible for listing in the National Register of Historic Places. Among the build alternatives, there are potential noise and visual effects to between 16 and 22 of these properties. Only the Yellow Alternative would have potential physical effects to currently identified historic properties (4). Both Brown Alternatives have the potential to physically affect one historic property if, after investigation of interior building materials, that property is determined to be eligible for the National Register of Historic Places. Consultation will continue as the Criteria of Adverse Effect is applied to all historic properties affected by the Selected Alternative and appropriate minimization and mitigation of adverse effects will be determined. The results will be detailed in the Final Environmental Impact Statement and Memorandum of Agreement (MOA).

No archaeological resources have been identified; a predictive model identified areas of high, medium, low and nil sensitivity to contain archaeological information. The model was tested and refined to further define those areas. Further investigation for archaeological resources will be completed, as detailed in an MOA to be included in the FEIS, prior to commencement of any construction activities. The MOA will also detail the disposition of any identified archaeological remains that may be found within the area of disturbance of the Selected Alternative.

Only the Yellow Alternative has the potential for direct physical effects to historic properties. Because the Purple, Brown and Green Alternatives provide prudent and feasible alternatives to the Yellow, they would be considered avoidance alternatives under Section 4(f) of the 1966 US Department of Transportation Act. Because the Yellow Alternative is not recommended as the Preferred Alternative, a formal Section 4(f) Evaluation has not been included in this document. An informal Section 4(f) discussion is included in **Appendix H**.

3. Air Quality

The project area is located within an area of non-attainment for ozone. The US 301 project is included in the WILMAPCO *Year 2025 Regional Transportation Plan* (RTP), through its anticipated operational year, and its component air quality conformity analysis, as adopted by WILMAPCO's council on March 6, 2003. The RTP demonstrated conformity with the State of Delaware 2005 State Implementation Plan (SIP) applicable air quality budgets. A project level emissions analysis for carbon monoxide (CO) was completed to determine local impacts (see **Tables III-28, 29**, and **30**). A relative comparison of results of this analysis between the No-Build and build alternatives indicated that there would be little to no difference in the overall emissions of CO within the project area. The air quality analysis results are presented in **Chapter III Section C**. The project would not cause or exacerbate any violations of applicable National Ambient Air Quality Standards.

4. Noise

Noise analysis for the project was conducted according to the guidelines for noise evaluation established in Title 23 of the Code of Federal Regulations Part 772. Where the predicted noise levels indicated an impact (noise levels at or approaching 66 dBA or an increase of 10 dBA), noise abatement criteria established by DelDOT were applied to identify if noise mitigation was feasible and reasonable for the impacts.

Between 63 and 108 individual residential noise impacts were identified for the build alternatives. When the noise abatement criteria were applied to the impacted noise sensitive areas, noise abatement was not considered feasible and reasonable. However, earthen berms proposed to reduce visual impact of the roadway would also reduce noise impacts at sensitive areas in Southridge, Springmill, Middletown Village, Chesapeake Meadow, Summit Bridge Farms, Ratledge Road and Airmont. A summary of predicted noise levels, potential impacts, and mitigation feasibility is detailed in **Chapter III Section D**.

5. Hazardous Materials Sites

A review of DNREC's environmental databases identified the locations of known contaminated sites in the project area. Of 23 Leaking Underground Storage Tank (LUST) sites with documented or suspected contamination and six Site Investigation and Restoration Sites identified within the project area, up to four are potentially within the proposed right of way of one or more of the alternatives. **Chapter III Section E** includes details of the investigation.

6. Natural Resources

The project build alternatives would cause direct effects on project area topography, geology, soils, groundwater, streams, wetlands, floodplains, forests, terrestrial and aquatic habitat, and wildlife. The following is a summary of the natural environmental effects of the project, which are discussed in detail in **Chapter III, Section F**.

Topography within the project area is flat, with little variability except near stream valleys. Except at overpass locations, the roadway grades of all build alternatives would follow the existing landscape grades. Only minor excavation is expected from the project; aquifers that are located within geologic formations that underlie the US 301 project area will not be significantly affected. The ground surface areas that have been characterized as recharge zones for the aquifers may also allow for introduction of pollutants into the groundwater through permeation during construction. The Purple Alternative has the highest percentage of potential roadway located on recharge zones, followed by the Yellow and Brown Alternatives, then the Green Alternatives.

The build alternatives would affect Prime Farmland Soils and Hydric Soils within the project area. The Yellow Alternative would have the smallest impact to both types of soils (203 acres and 158 acres, respectively); the Green Alternative North Option would have the largest impact on Prime Farmland Soils (437 acres); the Yellow Alternative would have the largest impact on hydric soils (158 acres).

Bridge and/or culvert construction at stream crossings, sedimentation, removal of riparian vegetation and surface water diversions could result in impacts to water quality within the project area watersheds. A total of 38 potential surface water impacts would occur under the Yellow Alternative. The Brown Alternative South Option has the least amount of potential impacts (28).

The greatest impact to watersheds within the project area would be from the increase in impervious surfaces created during the construction and expansion of new roadways. The construction of new road surfaces will increase the amount of impervious surface area within the watershed and also the amount and intensity of stormwater runoff entering surface water features within the project area. Mitigation options for watersheds will include the construction of stormwater management facilities to handle the increased stormwater runoff that will occur due to more impervious surface areas. Stormwater management facilities can facilitate the flow and

discharge of stormwater and reduce the possibility and effects of increased pollution, erosion, and morphological stream changes.

Impacts to stream and wetland surface water quality may result from each of the build alternatives. Direct impacts that result from bridge or roadway construction or those involving the disturbance of stream banks or channels will have an adverse impact on water quality by affecting stream flow rates, temperature and nutrient levels. The clearing and excavation of previously forested or agricultural lands may cause an increase in soil erosion and lead to further sedimentation of surface water features. Similarly, reductions in riparian forest may lead to elevated water temperatures which is directly limiting to cold-water fishes and decreases dissolved oxygen limiting to all aquatic life. Properly designed and constructed stormwater management facilities will control runoff entering surface water features from newly created highways and drainage ways and reduce the potential for sedimentation impact to receiving waters. During construction, the implementation of best management practices (BMPs) will reduce potential negative effects. Proper erosion and sediment control measures will be employed to limit the amount of erosion and the influx of sediment loads into adjacent surface waters.

Each of the alternatives would adversely affect waters of the United States, including wetlands, by displacing or filling these systems. Impacts also include interruption to wetland or stream hydrology. The Yellow Alternative, which has the largest waters of the U.S. impacts, would affect 50.5 acres of wetlands and 20,708 linear feet of waters. The Brown Alternative South Option has the smallest impact to wetlands (18.5 acres) and waters (14,278 lf). In accordance with federal and state regulations, avoidance and minimization measures to reduce impacts to wetlands and waters would continue to be implemented for all phases of the project and will continue through final design.

Impacts to floodplains have not been fully evaluated because of the lack of available floodplain data. A detailed survey of floodplain limits will be conducted during the design phase of the project. An evaluation of floodplains preliminarily mapped from FEMA Flood Insurance Rate Maps has been completed. Each of the build alternatives would require some encroachment into these floodplains, ranging from 1.0 acre for the Green and Brown Alternatives to 1.5 acres for the Purple and Yellow Alternatives.

Impacts to terrestrial habitat will result from the addition of paved road surfaces. Impacts could include the introduction of exotic and invasive species to areas of increased human disturbance. The greatest impacts to habitat and wildlife will occur as part of the off-alignment alternatives, (Purple, Brown, and Green), since these alternatives will have the highest amounts of habitat reduction and/or fragmentation. The Brown Alternative, South Option would impact the most forest (51.0 acres). The Green Alternative, North Option would affect the least amount of forest (34.1 acres). Habitat fragmentation, especially in relation to large woodland tracts, would result from traversing habitat and forming a roadway barrier for wildlife travel. Impacts to aquatic biota would also result from each of the build alternatives. The extent of impacts from

construction activities related to this project will depend on the type of construction activity and individual tolerance and pollutant sensitivity of fish, macroinvertebrates and other aquatic life.

Historic records of the federally-threatened bog turtle exist within the project area (**Chapter III Section F.9**). Phase I surveys were completed to determine potential bog turtle habitat. Phase II (visual and physical search) and Phase III (trapping) surveys for bog turtles were completed in compliance with the requirements specified by USFWS and DNREC. No bog turtles were found in any surveyed area. The site of the 1972 bog turtle sighting is identified as potentially occupied. All of the build alternatives will impact the potentially occupied watershed which could result in direct bog turtle impacts and in indirect and direct bog turtle habitat impacts. However, the potential for impacts is minimal because no bog turtles have been found in the watershed since 1972 and detailed Phase II/III surveys conducted in 2006 revealed no bog turtles present. Direct bog turtle impacts include road mortality and construction related mortality. Direct bog turtle habitat impacts include filling of wetlands. Indirect bog turtle habitat impacts include wetland hydrology alteration and introduction of invasive plant species. The Green South Alternative has the greatest effect to potentially occupied bog turtle habitat, and the Purple and Yellow Alternatives would have the least effect to potentially occupied areas. The Brown Alternatives and the Green North Alternative would have intermediate impacts to potentially occupied habitat.

All of the build alternatives are located within the area identified by DNHP where several rare, threatened or endangered species could potentially occur. No impacts are anticipated to most of the listed species, as none were observed within the project area during field investigations. All the retained alternatives have the potential to impact the queen snake; however, the Brown North Alternative would impact all the wetlands in which the queen snake was identified. The Yellow alternative would impact the queen snake along Scott Run while the rest of the alternatives would impact the queen snake along Scott Run and Back Creek. The queen snake is a wetland dependant species and avoidance, spanning, and minimization of impacts to wetlands along with compensatory wetland mitigation would limit impacts to the queen snake. The Yellow Alternative would impact cattail sedge, a state rare species identified during field investigations.

The Yellow and Purple Alternatives would impact 0.3 acres of a State Natural Area. All of the build alternatives will impact State Resource Areas; the Purple Alternative would impact the most acres (2.3) and the Yellow Alternative would impact the least acres (0.8).

7. Secondary and Cumulative Effects Analysis

A secondary and cumulative effects analysis (SCEA) is included within this DEIS. The geographic boundary (**Figure III-24**) for the analysis is based on a composite overlay analysis that includes the extent of the project's influence on regional traffic. The time frame used to fully understand regional changes and the potential future changes within the geographic boundary is from 1980 to 2030.

The SCEA concludes that the project's completion most likely will not influence the amount or location of development and consequent land use change that would occur in the area; however, the completion of a build alternative may influence the rate that planned development may occur. Additional indirect effects could occur as a result of changes in travel patterns associated with the build alternatives, including traffic volume changes resulting from toll diversions. An interstate Toll Diversion Working Group effort was convened to address toll diversion issues in Delaware and Maryland and recommend measures to minimize or mitigate toll diversions. Travel pattern changes could result in indirect effects to communities and resources outside of the project area. Environmental controls, such as the designation of protected areas and development areas, and infrastructure capacity, such as sewer, within the SCEA boundary will continue to influence the locations and extent of growth permitted in New Castle County, Delaware and in Kent and Cecil Counties, Maryland.

I. Permits Required

The following permits, approvals and agreements will be completed prior to commencement of the construction of a build alternative:

- National Environmental Policy Act Process, including the Final Environmental Impact Statement, Record of Decision, and Reevaluations;
- Section 106 of the National Historic Preservation Act, including archeological investigations, a final Determination of Adverse Effect, and Memorandum of Agreement among FHWA, DelDOT, the Advisory Council on Historic Preservation, the DE State Historic Preservation Officer, the Maryland Historic Trust (MD SHPO) and any consulting parties that may be identified;
- Biological Assessment and Informal Consultation with the USFWS and DNREC;
- ACOE Individual Permit for Impacts to Waters of the US, including wetlands, under Section 404 of the Clean Water Act;
- DNREC Wetlands and Subaqueous Lands Permit;
- DNREC Water Quality Certification under Section 401 of the Clean Water Act;
- DNREC Coastal Zone Management Program Federal Consistency Determination;
- National Pollution Discharge Elimination System permit;
- DNREC Erosion and Sediment Certification (DelDOT is designated agency);
- Floodplain determination and assessment under Federal Executive Order 11988, US Department of Transportation Order 5650.2, National Flood Insurance Act of 1968.
- Joint Federal/State Permit for the Alteration of any Floodplain, Waterway, Tidal, or Non-Tidal Wetland in Maryland.

J. Public Involvement Program

The Public Involvement Program for the US 301 Project Development effort has included extensive interaction with members of the public through stakeholder interviews, individual and community meetings, public workshops, and outreach through mailings, announcements, bulletin boards, a project office and a project website. Close to 100 individuals were initially contacted

during stakeholder interviews. The project mailing list was initially developed from zip code listings and continually updated throughout the project process. Members of the Project Team met with individuals, business owners, and various community organizations to provide a more individualized interaction about project issues. Five sets of Public Workshops provided the community an opportunity to interact with members of the Project Team, view displays, hear presentations, and offer comments about the project's purpose and need, alternatives and impacts. The Project Office was opened in July, 2005 to provide a "drop-in" opportunity for members of the public to discuss the project with Team members, and the project website, www.us301.org, contains updated information about all facets of the project as well as a link to provide comments directly to DelDOT.

K. Areas of Controversy

As described throughout this DEIS, the US 301 Project Development process has included an extensive public involvement effort. In addition, ongoing coordination with local, state and federal regulatory agencies and elected officials has addressed most controversial issues associated with the project. Where necessary, DelDOT has clarified facts regarding the project and discussed issues with interested parties. Development of alternative options, modifications to alignments, and other adjustments to the project scope of work have been made to address new issues as they were raised.

Examples of areas of controversy that have been identified during the project and addressed in this DEIS include:

- Individual property acquisition of residences, businesses, and community facilities, including Summit Airport
- Potential impacts to the Federally-threatened bog turtle
- Origin and destination of traffic; addition of Spur Road to meet project Purpose and Need on the Purple and Green Alternatives.
- Substantial environmental effects of the Blue and Red Alternatives
- The potential effects of the project's build alternatives on secondary growth
- Safety and access requirements at the proposed interchange south of Summit Bridge.
- The effects of the build alternatives on travel patterns and traffic volumes (especially truck travel), including within Kent and Cecil Counties, Maryland from the effect of toll diversion
- Determination of resources eligible for the National Register of Historic Places
- Noise impacts on project area residents and means to mitigate noise effects
- Identification of the Preferred Alternative

L. Next Steps in the Project Development Process

Following the review of this DEIS, all comments received will be considered during the continued process of determining a Selected Alternative for the project. A formal Public Hearing will be held no earlier than 15 days following the DEIS Notice of Availability in the

Federal Register. Comments on the DEIS will be received for a minimum of 45 days after publication of the Notice of Availability. All comments received, both during the document review process and the Public Hearing, will be addressed in the FEIS.

The FEIS will present the Selected Alternative for the project. Following the FEIS, the Federal Highway Administration will complete a Record of Decision to finalize the NEPA process and identify the Selected Alternative, and present the basis for the decision.

M. Statutory Provisions

A Federal agency may publish a notice in the Federal Register, pursuant to 23 USC § 139(l), indicating that one or more Federal agencies have taken final action on permits, licenses, or approvals for a transportation project. If such notice is published, claims seeking judicial review of those Federal agency actions will be barred unless such claims are filed within 180 days after the date of publication of the notice, or within such shorter time period as specified in the Federal laws pursuant to which judicial review of the Federal agency action is allowed. If no notice is published, then the periods of time that otherwise are provided by the Federal laws governing such claims will apply.

N. Summary of Costs and Financial Analysis

Design and construction of the US 301 project is proposed to be funded at four potential toll collection facilities along the build alternatives: 1) both directions at a US 301 mainline plaza located just north of the Delaware-Maryland Line; 2) north serving (to and from the north) interchange ramps at Levels Road; 3) north serving ramps at existing US 301 north of Armstrong Corner Road; and 4) north serving ramps to Jamisons Corner Road. However, projections indicate that the toll revenues may not be adequate to completely fund revenue bonds in the full amount of the estimated project costs. State Transportation Trust Funds (TTF), TTF revenue Bonds, Federal funds, or Federal Grant Anticipation Revenue Vehicle (GARVEE) Bonds could be used to provide the remaining required funds. DelDOT and their financial advisors are currently evaluating several funding scenarios involving these funding sources. DelDOT will develop a draft financial plan which will be presented to the state legislature and discussed in the FEIS.

In accordance with FHWA guidance (Federal Register; January 5, 2001), DelDOT will submit a final Initial Financial Plan for the funding of construction of the Selected Alternative concurrent with or shortly after a Record of Decision is issued.

A summary of the capital cost estimates for each build alternative is found in **Table S-1**. The costs for the build alternatives range from $499-$551 Million for the Brown Alternative, South Option, to $686-$758 Million for the Yellow Alternative.